Executive Summary

To meet the needs of California's projected population of 52 million in the year 2030, the State's water supply must be augmented and made more efficient. Water conservation, recycling, desalination, trading and storage of surface and groundwater are the components that will successfully manage the State's overall water supply.

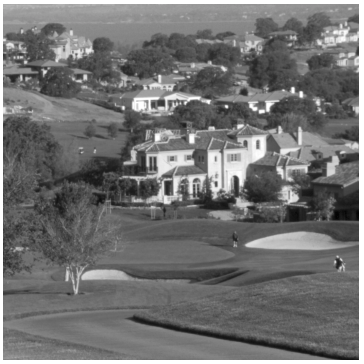
Since the 1890s, Californians have been reusing municipal wastewater for agriculture and farm irrigation. By the early 1900s, communities began using recycled water (treated wastewater) for landscape irrigation. Currently, California is recycling approximately 500,000 acre-feet of water per year for various uses.

California has the potential to recycle up to 1.5 million acre-feet per year of water by the year 2030. This could free up freshwater supplies to meet approximately 30 percent of the household water needs associated with projected population growth. However, to achieve that potential, Californians will have to invest nearly $11 billion (approximately $400 million annually) for additional infrastructure to produce and deliver the recycled water.

The most common recycled water uses include: (1) landscape irrigation of highway medians, golf courses, parks, and schoolyards; (2) industrial uses such as power station cooling towers, oil refinery boiler feed water, carpet dyeing, recycled newspaper processing, and laundries; and (3) agricultural uses such as irrigation of produce, pastures for animal feed, and nursery plant products. Recently, recycled water use has expanded to office buildings for toilet flushing.

In coastal areas, excessive groundwater pumping results in seawater intrusion, which contaminates the aquifers with salt water. Recycled water is used to recharge the aquifers along the coast. This creates a hydraulic barrier to the inflow of seawater, thus protecting the quality and replenishing the supply of the inland groundwater.

Groundwater aquifers have been recharged with recycled water in California since the 1960s. Because groundwater aquifers serve as potable water supply basins, groundwater recharge, including seawater intrusion barriers, is considered an indirect potable reuse. The Department of Health Services (DHS) requires advanced treatment of recycled water before it is used to recharge groundwater aquifers. These treatment requirements are more restrictive than the typical requirements for discharges to inland surface or coastal waters.



Serrano Country Club, irrigated with recycled water in El Dorado Hills, CA. Over 125 golf courses use recycled water in California.

Recycled water is used for toilet and urinal flushing in the recently constructed Smith Barney building in Irvine, CA.

At the final meeting of the Recycled Water Task Force, Thomas Hannigan (l.), Director of DWR, listens to Assemblymember Jackie Goldberg, author of AB 331, which mandated creation of the Task Force.

Assembly Bill No. 331 was passed by the California Legislature, and signed into law by Governor Gray Davis on October 7, 2001. The bill required the creation of the 2002 Recycled Water Task Force (Task Force) to identify constraints, impediments, and opportunities for the increased use of recycled water and report to the Legislature by July 1, 2003. Although water recycling includes treatment of a broad range of wastewater sources, the Task Force decided to focus on the planned reuse of treated municipal wastewater; specifically, the financial/economic, regulatory, and social issues that typically arise in water recycling projects.

Representatives of federal, State, and local agencies, private entities, environmental organizations, universities, concerned individuals and public-interest groups were appointed to the 40-member Task Force in April 2002. The Task Force includes experts in the field of water recycling, including those involved in the production and use of recycled water, public health officials, world-renowned researchers, environmental organizations, and the public. The Task Force established committees (workgroups) to focus on specific topics of concern and produce reports that served as a basis of Task Force decision-making. The Department of Water Resources (DWR), the State Water Resources Control Board (SWRCB), and the DHS provided technical assistance to the Task Force and its workgroups.

DHS' regulations prescribe the level of treatment necessary for the various uses of recycled water. In general, the public has accepted these regulations as being adequate for protection of public health. There are successful indirect potable reuse projects involving groundwater recharge in California and new projects continue to be proposed. However, in some instances, the public has not been receptive to the concept of using recycled water to recharge groundwater basins that serve as drinking water supply sources. Some indirect potable reuse proposals have been mischaracterized by images of recycled water being fed directly into drinking water pipeline systems. The Task Force found the need to involve the public much earlier in the decision-making process for projects, to make the process much more transparent and to provide facts early on in project planning. Therefore, the Task Force devoted considerable attention to issues surrounding public health and the need for increased education and outreach related to the facts and scientific research about recycled water.

Displaying interagency cooperation, the Task Force was led by (from left) David Spath (DHS), Eric Schockman (facilitator), Richard Katz (SWRCB), and Jonas Minton (DWR), Fawzi Karajeh (DWR).

Other critical issues include the lack of local funding for (1) water recycling infrastructure, (2) research on emerging contaminants, and (3) public health concerns. These have also been identified as impediments to increased water recycling statewide. A financial incentive for the local development of water recycling projects is an effective tool for the construction of water recycling facilities and infrastructure, as evidenced by the SWRCB's Propositions 13 and 50 loan and grant programs. Therefore, the need for additional State funding to provide local water recycling funding assistance is also reflected in the recommendations.

The Task Force identified and adopted 26 issues with respective recommendations to address obstacles, impediments, and opportunities for California to increase its recycled

water usage. Recommendations associated with thirteen of these issues were adopted as key recommendations deserving of more immediate attention. The 26 issues and a summary of the recommendations follow. The issues have been numbered as shown in parentheses to correspond to their numbers assigned in Chapters 4, 5, and 6 of the report.

Key Issues and Recommendations Summary:

***Funding for Water Recycling Projects (1.1)** - State funding for water reuse/recycling facilities and infrastructure should be increased beyond Proposition 50 and other current sources.*

***Community value-based Decision-making Model for Project Planning (2.1)** - Local agencies should engage the public in an active dialogue and participation using a community value-based decision-making model in planning water recycling projects. Public participation activities should go beyond the minimum requirements of State and federal environmental laws, perhaps being reinforced by State funding agencies requiring a comprehensive public participation process as a condition for receiving State funds.*

***Leadership support for water recycling (2.2) -** State government should take a leadership role in encouraging recycled water use and improve consistency of policy within branches of State government. Local agencies should create well-defined recycled water ordinances. Local regulatory agencies should effectively enforce these ordinances. The State should convene an independent statewide review panel on indirect potable reuse to ensure adequate health and safety assurance for California residents.*

***Educational Curriculum (2.3)** - The State should develop comprehensive education curricula for public schools; and institutions of higher education should incorporate recycled water education into their curricula. Governmental and nongovernmental organizations should enhance their existing public education programs.*

***State-sponsored media campaign (2.4) -** The State should develop a water issues information program, including water recycling, for radio, television, print, and other media.*

***Uniform Plumbing Code Appendix J (3.1) -** The State should revise Appendix J of the Uniform Plumbing Code, which addresses plumbing within buildings with both potable and recycled water systems, and adopt a California version that will be enforceable in this State.*

***DHS Guidance on Cross-connection Control (3.2)** - The Department of Health Services should prepare guidance that would clarify the intent and applicability of Title 22, Article 5 of the California Code of Regulations pertaining to dual plumbed systems and amend this article to be consistent with requirements included in a California version of Appendix J that the Task Force is recommending to be adopted.*

Health and Safety Regulation (4.1) - *The Department of Health Services should involve stakeholders in a review of various factors to identify any needs for enhancing existing local and State health regulation associated with the use of recycled water.*

Incidental Runoff (4.2) - *The State should investigate, within the current legal framework, alternative approaches to achieve more consistent and less burdensome regulatory mechanisms affecting incidental runoff of recycled water from use sites.*

Uniform Interpretation of State Standards (4.3) - *The State should create uniform interpretation of State standards in State and local regulatory programs by taking specific steps recommended by the Task Force, for example, appointing an ombudsman in the State Water Resources Control Board to oversee uniformity within the SWRCB and the Regional Water Quality Control Boards.*

Water Softeners (4.4) *- The Legislature should amend the Health and Safety Code Sections 116775 through 116795 to reduce the restrictions on local ability to impose bans on, or more stringent standards for, residential water softeners. Within the current legal provisions on water softeners, local agencies should consider publicity campaigns to educate consumers regarding the impact of self-regenerative water softeners.*

Uniform Analytical Method for Economic Analyses (5.1) - *A uniform and economically valid procedural framework should be developed to determine the economic benefits and costs of water recycling projects for use by local, State, and federal agencies. Guidance should be developed to conduct economic feasibility analyses, incorporating nonmarket values to the extent possible. Appropriate benchmarks for comparing incremental costs of developing recycled water with the cost of developing an equivalent amount through alternative measures. An advisory team should be created by the Department of Water Resources, the State Water Resources Control Board, and the Department of Health Services to assist these tasks.*

Research Funding (6.1) - *The State should expand funding sources to include sustainable State funding for research on recycled water issues.*

University Academic Program for Water Recycling (6.2) *- The State should encourage an integrated academic program on one or more campuses for water recycling research and education, such as through State research funding.*

Additional Important Issues and Recommendations Summary:

Funding Coordination (1.2) *- A revised funding procedure should be developed to provide local agencies with assistance in potential State and federal funding opportunities. A Water Recycling Coordination Committee should be established to work with funding agencies, streamlining project selection within individual agencies while ensuring an open process, peer review, and public review.*

Regional Planning Criterion (1.3) - *State funding agencies should make better use of existing regional planning studies to determine the funding priority of projects. This process would not exclude projects from funding where regional plans do not exist.*

Funding Information Outreach (1.4) - *Funding agencies should publicize funding availability through workshops, conferences, and the Internet.*

Department of Water Resources Technical Assistance (1.5) - *Funding sources should be expanded to include sustainable State funding for DWR's technical assistance and research, including flexibility to work on local and regional planning, emerging issues, and new technology.*

Project Performance Analysis (1.6) - *Resources should be provided to funding agencies to perform comprehensive analysis of the performance of existing recycled water projects in terms of costs and benefits and recycled water deliveries. An estimate should be performed of future benefits potentially resulting from future investments.*

Recycled Water Symbol Code Change (3.3) - *The Department of Housing and Community Development should submit a code change to remove the requirement for the skull and crossbones symbol in Sections 601.2.2 and 601.2.3 of the California Plumbing Code.*

Stakeholder Review of Proposed Cross-connection Control Regulations (3.4) - *Stakeholders are encouraged to review Department of Health Services draft changes to Title 17 of the Code of Regulations pertaining to cross-connections between potable and nonpotable water systems.*

Cross-connection Risk Assessment (3.5) - *The Department of Health Services should support a thorough assessment of the risk associated with cross-connections between disinfected tertiary recycled water and potable water.*

Permitting Procedures (4.5) - *Various measures should be conducted to improve the administration and compliance with local and State permits, including providing Department of Health Services guidance, dissemination of information by the Association of California Water Agencies and the California Association of Sanitation Agencies, and State and local tax incentives to offset costs of compliance with regulations.*

Source Control (4.6) *- Local agencies should maintain strong source control programs and increase public awareness of their importance in reducing pollution and ensuring a safe recycled water supply.*

Economic Analyses (5.2) - *Local agencies are encouraged to perform economic analyses in addition to financial analyses for water recycling projects to provide transparency regarding the true costs and benefits of projects. State and federal agencies should require economic and financial feasibility as two funding criteria in their funding programs.*

Kirk Bone signs the Task Force report, witnessed by Fawzi Karajeh (l.) and Al Vargas (r.).

Statewide Science-based Panel on Indirect Potable Reuse (6.3) - *As required by AB 331, the Task Force reviewed the 1996 report of the California Indirect Potable Reuse Committee and other related advisory panel reports and concluded that reconvening this committee would not be worthwhile at this time.*

Details concerning the recommendations are contained in the report.

The Task Force intends for this report to be used as a working tool to guide the Legislature, State government, public agencies, the public and all water recycling stakeholders towards the safe and successful expansion of recycled water use to help meet the State's future water supply needs.